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Program Outcomes, Program Specific Outcomes and Course Outcomes

Department of Chemistry, Fazl Ali College, Mokokchung.

Programme Outcomes: B. Sc Chemistry

Department of Chemistry	**After successful completion of 3-year Degree Program in Chemistry, a student should be able to:**
Programme Outcomes	PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry. PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion. PO-3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyse the results of chemical reactions. PO-4. Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community. PO-5. Find out the green route for chemical reaction for sustainable development . PO-6. To inculcate the scientific temperament in the students and outside the scientific community. PO-7. Use modern techniques, decent equipments and Chemistry software.
Programme Specific Outcomes	PSO-1. Gain the knowledge of chemistry through theory and practical. PSO-2. To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions. PSO-3. Identify chemical formulae and solve numerical problems. PSO-4. Use modern chemical tools, Models, Chem-draw, Charts and Equipment. PSO-5. Know structure-activity relationship. PSO-6. Understand good laboratory practices and safety. PSO-7. Develop research-oriented skills. PSO-8. Make aware and handle the sophisticated instruments/equipment.
Course Outcomes B. Sc Chemistry Semester-III	
Course	**Outcomes**
Chem-101	***Inorganic Chemistry (Pass CourseTheory)*** CO-1. Understand the structure of an atom and how they are placed in a periodic table. CO-2. Know the nature of bonding: covalent and ionic CO-3. Understand the s and p block elements as well the noble gases. CO-4. Know the nuclear reactions and applications CO-5. Have an idea about acid and bases. To understand volumetric analysis.
Chem-102	***Inorganic Chemistry (Pass Course Practical)*** CO-1. To be able to report atleast five radicals/ions to be prepared from an inorganic mixture. CO-2. Study the estimation of ions in compound through standardization of solutions and to report the results.
Chem-103	***Inorganic Chemistry (Honours Course Theory)*** CO-1. Understand the chemical bonding and industrial chemistry. CO-2. Know molecular symmetry and how to analyse experimental data. CO-3. Understand bioinorganic chemistry. CO-4. Learn about nanomaterials.

	CO-5. Have an idea about Crystal Field Theory & Magnetochemistry, organometallic chemistry and metal ligand equilibria in solution.
Chem-104	***Inorganic Chemistry (Pass Course Theory)*** CO-1. To detect radicals/ ions in inorganic mixtures. CO-2. To gravimetrically analyse elements, present in compounds.
Course Outcomes B. Sc Chemistry Semester-II	
Chem-201	***Organic Chemistry (Pass Course Theory)*** CO-1. Learn about the shapes and bonding in organic molecules along with stereochemistry of organic molecules. CO-2. Learn about alkanes, alkenes and alkynes CO-3. Understand about arenes and aromaticity with reaction mechanisms. CO-4. Know about aryl and alky halides & alcohols and phenols. CO-5. Have an idea about aldehydes, ketones and ethers.
Chem-202	***Organic Chemistry (Pass Course Practical)*** **CO-1.** Learn how to analyse organic compounds. CO-2. Learn the sublimation of volatile compounds. Also, to determine their melting and boiling points.
Chem-203	***Organic Chemistry (Honours Course Theory)*** CO-1. Learn about organic synthesis. CO-2. Have an idea about dienes, polynuclear aromatic hydrocarbons and organosulphur. CO-3. Understand about synthetic polymers & pericyclic reactions. CO-4. Know about heterocyclic compounds. CO-5. Have an idea about organic photochemistry and molecular rearrangement.
Chem-204	***Organic Chemistry (Honours Course Practical)*** CO-1. Understand and learn how to do qualitative analysis of organic compounds. CO-2. Learn to find functional groups and detection of elements. CO-3. Determination of the melting point/boiling point CO-4. Identification of the compound with the help of a reference book. CO-5. Learn about the preparation of the derivative and determination of its melting point.
Course Outcomes B. Sc Chemistry Semester-III	
Chem-301	***Physical Chemistry (Pass Course Theory)*** CO-1. Learn about the thermodynamics. CO-2. Know more about gaseous and liquid states of matter. CO-3. Understand about Phase rule and its applications. CO-4. Know about electrochemistry. CO-5. Have an idea about Chemical kinetics and macromolecules.
Chem-302	***Physical Chemistry (Pass Course Practical)*** **CO-1.** Learn determination of the heat of neutralization, molecular weight, heat of dilution of acids , to determination of the velocity constant of a reaction and determination of the solubility of a salt and the study of the adsorption and to perform one out of all these experiments.
Chem-303	***Physical Chemistry (Honours Course Theory)*** CO-1. Learn about electrochemistry. CO-2. Have an idea about Phase equilibria. CO-3. Understand about physical properties and molecular structure and the solid state. CO-4. Know about chemical kinetics. CO-5. Have an idea about statistical thermodynamics.
Chem-304	***Physical Chemistry (Honours Course Practical)*** CO-1. Understand and learn how to determine surface tension of a liquid CO-2. Learn to find viscosity of a given mixture.

	CO-3. Know how to find partition coefficient of a solute. CO-4. Learn about determination of velocity constant CO-5. Learn about conductometric titrations of an acid by a base CO-6. Know how to perform determination of the heat of solution of solid calcium chloride by the Born-Haber cycle. CO-7. Have an idea about determination of the critical solution temperature of the phenol-water system. CO-8. Know the kinetics of the reaction between potassium persulfate and potassium iodide.
Course Outcomes B. Sc Chemistry Semester-IV	
Chem-401	***Inorganic Chemistry (Pass Course Theory)*** CO-1. Learn about the Comparative study of d-block elements and Nuclear Chemistry. CO-2. Know about Coordination compounds and the Environmental Chemistry CO-3. Understand about the chemistry of lanthanides and actinides and also the separation Methods. CO-4. Know about active nitrogen, activated charcoal, allotropy, isomorphism, alloy and amalgams, principles of Iodometry and Iodimetry, resins-cationic and anionic resins, molecular sieves, Carborandum and inorganic polymers. CO-5. Have an idea about metal carbonyls and non-aqueous solvents.
Chem-402	***Inorganic Chemistry (Pass Course Practical)*** CO-1. Learn about volumetric analysis CO-2. Learn about oxidation-reduction titrations CO-3. Know about gravimetric estimations.
Chem-403	***Inorganic Chemistry (Honours Course Theory)*** CO-1. Learn about quantum mechanics. CO-2. Have an idea about spectroscopy CO-3. Understand about vibrational spectroscopy. CO-4. Know about rotational spectroscopy.
Chem-404	***Inorganic Chemistry (Honours Course Practical)*** CO-1. Learn about determination of the strength of a given solution potentiometrically. CO-2. Know how to do verification of Beer-Lambert's Law. CO-3. Learn about the decomposition of hydrogen peroxide. CO-4. Learn Organic preparations. CO-5. Learn about Inorganic Preparations as well characterization of the compound prepared, recrystallization verification of anion and cations finally yield and quality of the compound.
Course Outcomes B. Sc Chemistry Semester-V	
Chem-501	***Organic Chemistry (Pass Course Theory)*** CO-1. Learn about carboxylic acids and its derivatives and active methylene compounds. CO-2. Know about nitro compounds and Amines. CO-3. Understand about organometallic compounds, amino acids, peptides and proteins. CO-4. Know about carbohydrates. CO-5. Have an idea about synthetic dyes and diazo compounds.
Chem-502	***Organic Chemistry (Pass Course Practical)*** CO-1. Learn about identification of compounds with the help of a reference book. CO-2. Learn about determination of pH of given aerated drinks, fruit juices,shampoos and soaps.
Chem-503	***Organic Chemistry (Honours Course Theory)*** CO-1. Learn about analytical chemistry. CO-2. Have an idea about spectroscopy.
Chem-504	***Organic Chemistry (Honours Course Practical)*** CO-1. Learn about qualitative analysis. CO-2. Know how to do chromatography. CO-3. Learn about the order of a reaction. CO-4. Learn how to determine critical micellar concentration.

	CO-5. Know more about determination of strengths of halides. CO-5. Learn about Inorganic Preparations as well characterization of the compound prepared, recrystallization verification of anion and cations finally yield and quality of the compound.
Course Outcomes B. Sc Chemistry Semester-V	
Chem-601	***Physical Chemistry (Pass Course Theory)*** CO-1. Learn about colloids, adsorption and catalysis. CO-2. Know about gaseous states. CO-3. Understand about chemical and ionic equilibria. CO-4. Know more about liquid state. CO-5. Have an idea about photochemistry.
Chem-602	***Physical Chemistry (Pass Course Practical)*** CO-1. Learn about the kinetics of iodination of acetone. CO-2. Learn about the kinetics of a second order reaction. CO-3. Know how to determine critical solution temperature and composition of the phenol-water system.. CO-4. Learn about the enthalpy of hydration. CO-5. Know more about pH metric titrations. CO-6.Learn how to identify compounds with the help of a reference book.
Chem-603	***Physical Chemistry (Honours Course Theory)*** CO-1. Learn about environmental chemistry. CO-2. Have an idea about green chemistry.
Chem-604	***Physical Chemistry (Honours Course Practical)*** CO-1. Do a project work based on green chemistry. CO-2. Do a paper presentation of the project work performed on a given topic.